Business Process Modeling in the tOWL Language

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In this presentation, we will talk about how complex processes, such as Leveraged Buyouts (LBO), can be represented in the Temporal Web Ontology Language (tOWL). The tOWL language [1] is a temporal ontology language built as an extension of the DL species of the Web Ontology Language (OWL-DL). Compared to the latter, tOWL provides the required expressiveness for the representation of basic temporal aspects, such as change, as well as more complex temporal phenomena, such as (business) processes. The expressiveness of the temporal language is sufficient for the representation of LBO processes - one of the most complex processes known from business process modelling.

An LBO is a strategy involving the acquisition of a company by another company, using a significant amount of borrowed money (bonds or loans) to meet the cost of acquisition. The stages of an LBO, when regarded as process, are connected as presented in Figure 1.
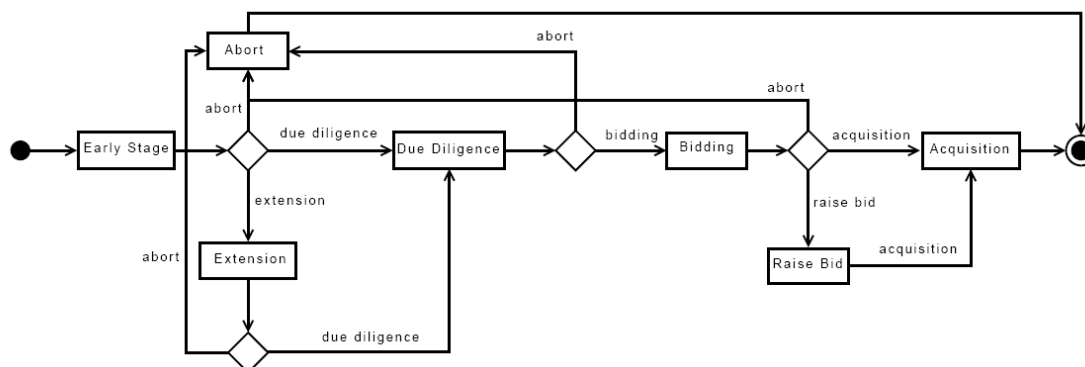

Figure 1. Leveraged Buyout

A tOWL axiom describing one possible path, in relation to the allowed state transitions, through an LBO process can be formulated in Description Logic notation as in Figure 2.

$$
\begin{aligned}
\mathtt{LBOProcess\_TS} \quad \equiv \quad &\exists(\mathtt{earlyStage \circ time, time}).\mathtt{starts} \sqcap \\
&\sqcap \exists(\mathtt{earlyStage \circ time, abort \circ time}).\mathtt{meets} \sqcap \\
&\sqcap \exists(\mathtt{abort \circ time, time}).\mathtt{finishes})
\end{aligned}
$$

Figure 2. A path through an LBO process in tOWL

Acknowledgement

References

[1]   Milea, V., Frasincar, F. and Kaymak, U. *Knowledge Engineering in a Temporal Semantic Web Context*. Eighth International Conference on Web Engineering (ICWE 2008), pages 65-74, IEEE Computer Society Press, 2008.